

Hypertension Updates Clinical Practice Guidelines

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CASE SCENARIO

- M. A. is a 62-year-old man with type 2 diabetes first diagnosed 3 years ago. Other medical problems include obesity and hypothyroidism. He presents now for routine follow-up and is noted to have a blood pressure of 148/87 mmHg. He is asymptomatic.
- Physical exam reveals; B.P.150/93 mmHg, P. 84/m. There is no retinopathy or thyromegaly. There is no clinical evidence of CHF or PVD.

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- Laboratory evaluation reveals trace protein on urinalysis, blood urea nitrogen of 14 mg/dl, serum creatinine of 1.2 mg/dl, random serum glucose of 169 mg/dl, normal electrolytes, and normal thyroid-stimulating hormone levels. A 24-h urine collection reveals a urinary albumin excretion rate of 250 mg/day.

Questions

- **Does this patient have renal disease?**
- **Should his blood pressure be treated?**
- **What is the treatment target?**
- **What treatment strategy should be used?**

CURRENT CHRONIC KIDNEY DISEASE (CKD) NOMENCLATURE USED BY KDIGO

- CKD is defined as abnormalities of kidney structure or function, present for >3 months, with implications for health and CKD is classified based on cause, GFR category, and albuminuria category (CGA).

Prognosis of CKD by GFR and Albuminuria Categories: KDIGO 2012				Persistent albuminuria categories Description and range		
				A1	A2	A3
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30-300 mg/g 3-30 mg/mmol	>300 mg/g >30 mg/mmol
GFR categories (ml/min/1.73 m ²) Description and range	G1	Normal or high	≥90	Green	Yellow	Orange
	G2	Mildly decreased	60-89	Green	Yellow	Orange
	G3a	Mildly to moderately decreased	45-59	Yellow	Orange	Red
	G3b	Moderately to severely decreased	30-44	Orange	Red	Red
	G4	Severely decreased	15-29	Red	Red	Red
	G5	Kidney failure	<15	Red	Red	Red

Previously micro-albuminuria

Previously macro-albuminuria

Green: low risk (if no other markers of kidney disease, no CKD); Yellow: moderately increased risk; Orange: high risk; Red, very high risk.

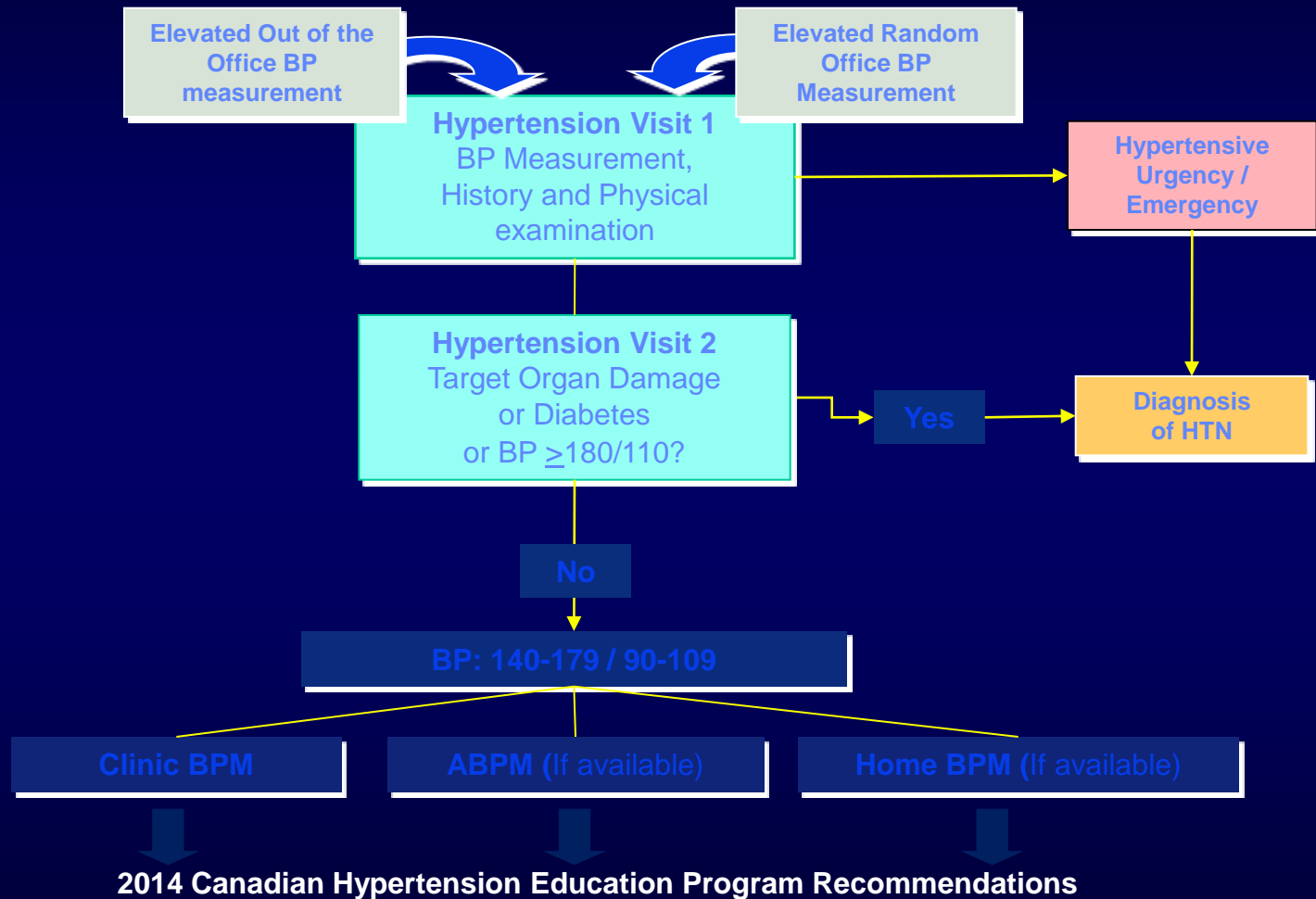
KDIGO Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. Kidney Int Suppl. 2013;3:136-150.

http://www.kdigo.org/clinical_practice_guidelines/pdf/CKD/KDIGO_2012_CKD_GL.pdf Accessed February 26, 2013

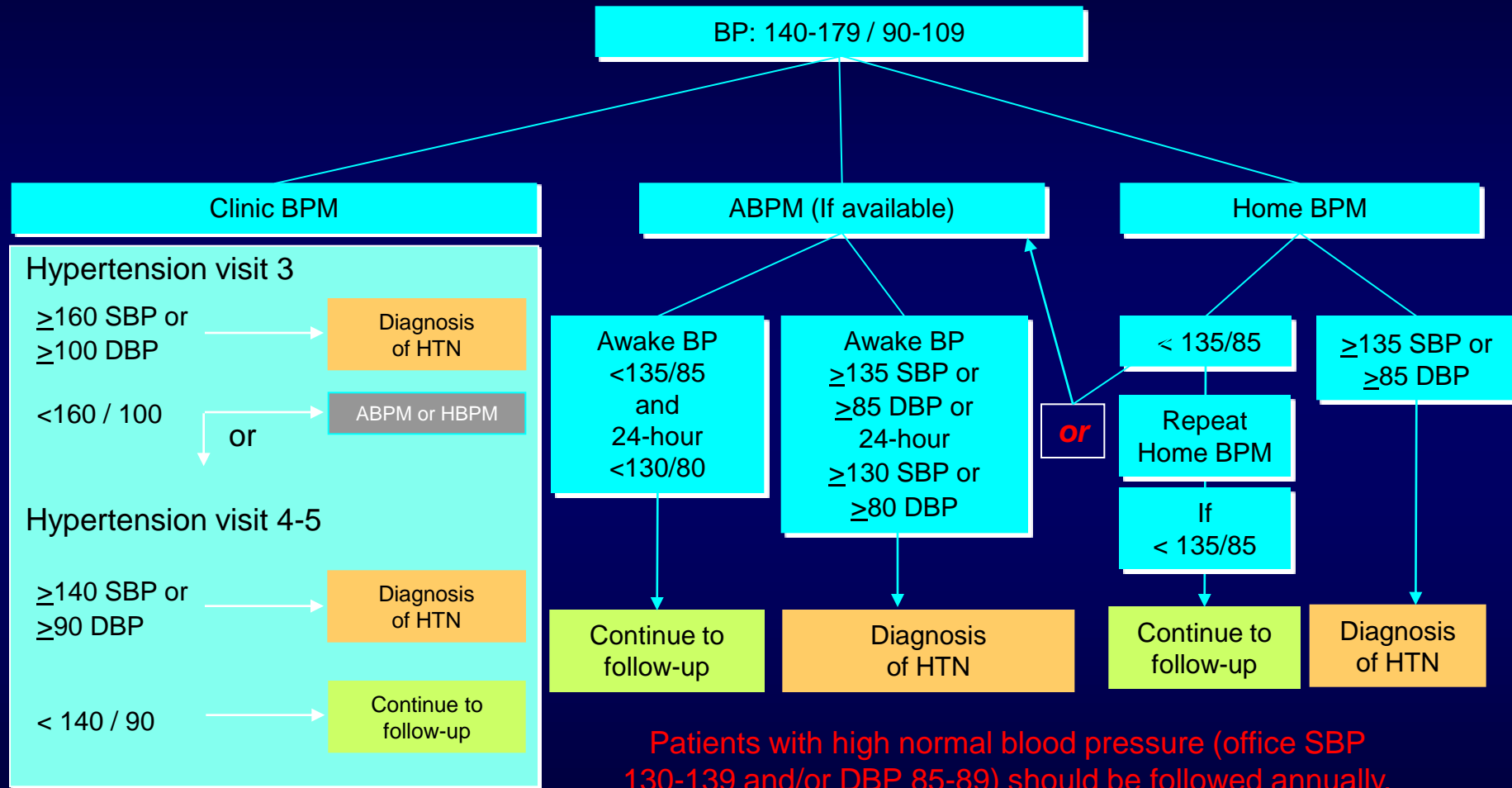
Recommendations for Hypertension Diagnosis, Assessment, and Follow-up

2014 **Canadian Hypertension
Education Program**

Criteria for the Diagnosis of Hypertension and Recommendations for Follow-up

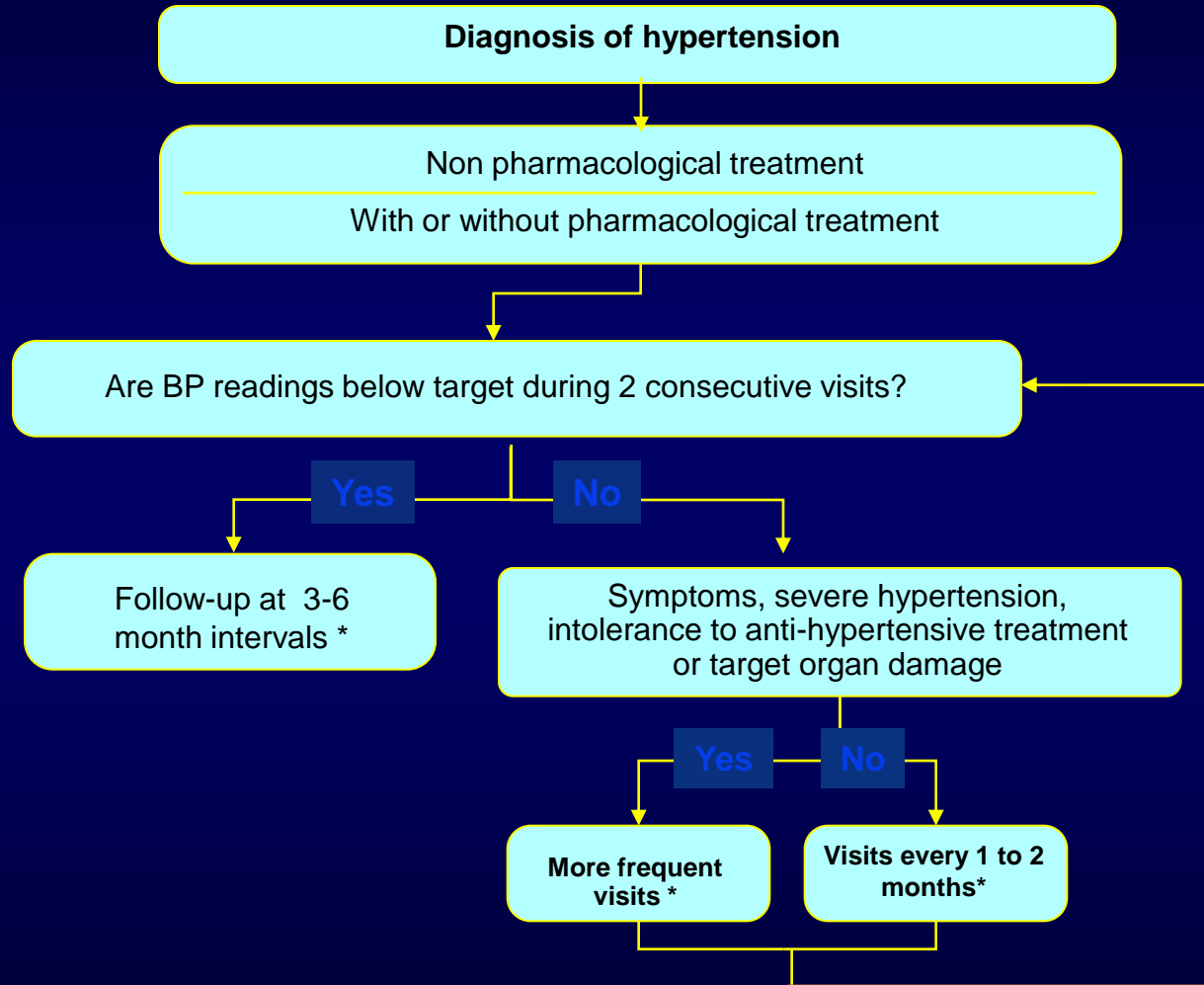


Criteria for the Diagnosis of Hypertension and Recommendations for Follow-up

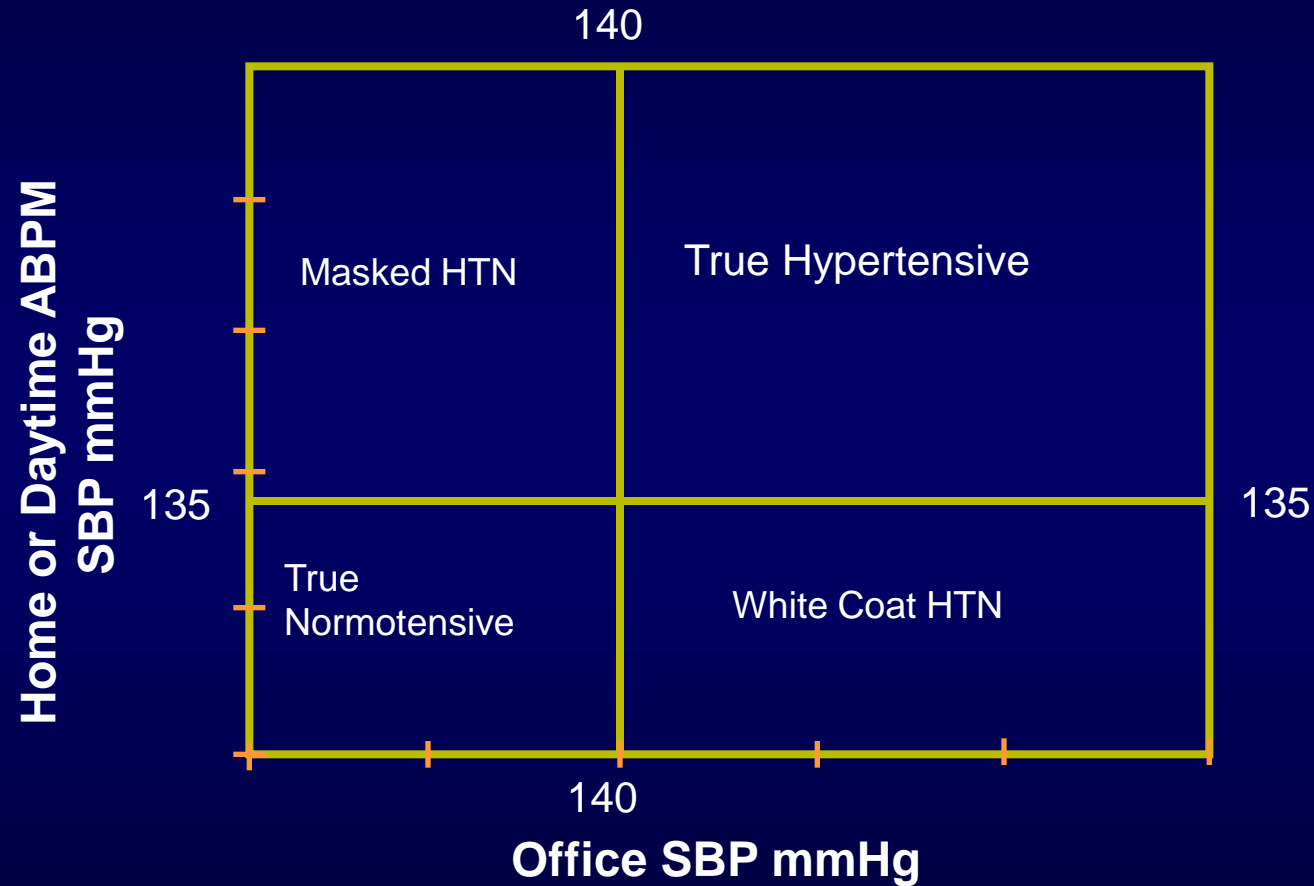


Criteria for the Diagnosis of Hypertension and Recommendations for Follow-up

*Consider home blood pressure measurement for follow-up readings, to assess for the presence of masked hypertension or white coat effect and to enhance adherence.



The Concept of Masked Hypertension



Derived from Pickering et al. *Hypertension* 2002;40:795-796

2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults.

**Report From the Panel Members
Appointed to the Eighth Joint
National Committee (JNC 8)**

Questions guiding the JNC8 review

This hypertension guideline focuses on **3 questions** related to high blood pressure (BP) management. They address **thresholds, goals for pharmacologic treatment, and whether particular antihypertensive drugs or drug classes improve important health outcomes** compared to others.

1. In adults with hypertension, does initiating antihypertensive pharmacologic therapy at specific BP thresholds improve health outcomes?
2. In adults with hypertension, does treatment with antihypertensive pharmacologic therapy to a specified BP goal lead to **improvements in health outcomes**?
3. In adults with hypertension, do **various antihypertensive drugs or drug classes** differ in comparative benefits and harms on specific health outcomes?

➔ The answers to these three questions are reflected in 9 recommendations

Recommendations

	<u>BP thresholds</u>	<u>Goals</u>
✓ <u>Recommendation 1</u> (Strong recommendation)		
General population ≥60 years	SBP ≥150 mm Hg or DBP ≥90 mm Hg	SBP <150 mm Hg and DBP <90 mm Hg
✓ <u>Recommendation 2</u> (Strong recommendation)		
General population <60 years	DBP ≥90 mm Hg	DBP <90 mm Hg
✓ <u>Recommendation 3</u> (Expert opinion)		
General population <60 years	SBP ≥140 mm Hg	SBP <140 mm Hg

Recommendations

✓ Recommendation 4

(Expert opinion)

Population with **CKD**
≥18 years

BP thresholds

SBP ≥140 mm Hg
or DBP ≥90 mm Hg

Goals

SBP <140 mm Hg
and DBP <90 mm Hg

✓ Recommendation 5

(Expert opinion)

Population with **diabetes**
≥18 years

SBP ≥140 mm Hg
or DBP ≥90 mm Hg

SBP <140 mm Hg
and DBP <90 mm Hg

✓ Recommendation 6

(Moderate recommendation)

General **nonblack**
population *(with diabetes)*

Initial treatment

Thiazide-type diuretic,
calcium channel blocker (CCB),
angiotensin-converting enzyme inhibitor (ACEI),
or angiotensin receptor blocker (ARB)

Recommendations

✓ Recommendation 7

(Moderate recommendation)

General *(with diabetes)*
black population

✓ Recommendation 8

(Moderate recommendation)

Population with **CKD**
≥18 years

✓ Recommendation 9

(Expert opinion)

Goal BP not reached
within **a month** of treatment

Goal BP not reached
with 2 drugs

Initial treatments

Thiazide-type diuretic,
or calcium channel blocker (CCB)

Initial or add-on treatments

Angiotensin-converting enzyme inhibitor (ACEI),
or angiotensin receptor blocker (ARB)

Non control strategies

Increase the dose of the initial drug,
or add a second drug *(from the list provided)*

Add and titrate a third drug *(from the list provided)*
Do not use an ACEI and an ARB together in the same patient



ADA 2014 Recommendations: Nephropathy

Treatment

- ACE inhibitor, ARB not recommended in diabetic patients with normal blood pressure, albumin excretion <30 mg/24 h for primary prevention of diabetic kidney disease
- Nonpregnant patient with modestly elevated (30–299 mg/day) or higher levels (>300 mg/day) of urinary albumin excretion
 - ***Use either ACE inhibitors or ARBs (not both)***

ADA 2014 Recommendations: Nephropathy

Treatment

- For people with diabetes and diabetic kidney disease (albuminuria >30 mg/24 h), reducing dietary protein below usual intake not recommended
 - When ACE inhibitors, ARBs, or diuretics are used, monitor serum creatinine, potassium levels for increased creatinine or changes in potassium

CASE

Initial Considerations

- 57 yr old Black male with DM for 4 years and HTN for 13 Ys.
 - SCr 2.1 mg/dl, and BP 156/94 mmHg. Spot urine ACR = 330 mg/g, on ACEI and diuretic.
 - Subsequent treatment for this patient might include the following options?
- Increase ACEI or add ARB
 - If GFR < ~35 ml/min change to loop diuretic
 - Add non-DHP CCB
 - If BP controlled but proteinuria persists add third RAAS inhibitor
 - HR > 84: add beta-blocker or alpha/beta-blocker
 - HR < 84: another class of CCB
 - At each step revisit non pharmacologic aspects



BP and RAAS interruption

- Individualize BP targets and agents.
- Inquire about postural dizziness and check for postural hypotension regularly when treating CKD patients with BP-lowering drugs.
- We **recommend** that in both diabetic and non-diabetic adults with CKD and urine albumin excretion ≥ 30 mg/ 24 hours whose office BP is consistently $>140/90$ mm Hg be treated with BP-lowering drugs to maintain a BP that is consistently $\leq 140/90$ mm Hg
- We **suggest** that in both diabetic and non-diabetic adults with CKD and with urine albumin excretion of ≥ 30 mg/24 hours whose office BP is consistently $>130/80$ mm Hg be treated with BP-lowering drugs to maintain a BP that is consistently $\leq 130/80$ mm Hg

BP and RAAS interruption

- We suggest that an **ARB or ACE-I** be used in diabetic adults with CKD and urine albumin excretion **30–300 mg/ 24 hours**.
- We recommend that an ARB or ACE-I be used in both diabetic and non-diabetic adults with CKD and urine albumin excretion **>300 mg/24 hours**
- There is insufficient evidence to recommend combining an ACE-I with ARBs to prevent progression of CKD.
- We suggest that an ARB or ACE-I be used in children with CKD in whom treatment with BP-lowering drugs is indicated, irrespective of the level of proteinuria.

RAAS System Blockers in DKD

- 6.1: We recommend not using an angiotensin-converting enzyme inhibitor (ACE-I) or an angiotensin receptor blocker (ARB) for the primary prevention of DKD in normotensive normoalbuminuric patients with diabetes. (1A)
- 6.2: We suggest using an ACE-I or an ARB in normotensive patients with diabetes and albuminuria levels ≥ 30 mg/g who are at high risk of DKD or its progression. (2C)



Thank you

